Kano Model Customer Satisfaction Analysis of Medical Services

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Abstract - *Healthcare is a vital service sector that provides quality treatment services to patients aiming at achieving individual satisfaction. In order to improve the quality of the healthcare sector, patients should be involved in the improvement process. The aim of this study is to provide a systematic approach for determining and prioritizing healthcare quality attributes that affect patients' satisfaction using the Kano Model tool. The Kano Model of Customer (Consumer) Satisfaction classifies product attributes based on how they are perceived by customers and their effect on customer satisfaction. These classifications are useful for guiding design decisions in that they indicate when good is good enough, and when more is better. The application of the Kano model to customer service is expected to provide useful information on the types of requirements that must be fulfilled to enhance customer satisfaction. A Government Medical College was chosen as the location for the application of this Kano Model Analysis.*

Key Words: Kano Model, Customer Satisfaction, Medical Services

Fig -1: Kano Model Diagram

1. INTRODUCTION

The Kano model was developed in 1984 by Noriaki Kano. It aims to connect the requirements fulfilled by products or services with customer satisfaction and identifies three types of requirements that influence ultimate customer satisfaction. Figure 1 presents the fundamental concepts of the Kano model. The horizontal axis of the diagram indicates the extent to which a product aspect fulfills customer requirements and the vertical axis indicates the extent to which customers are satisfied with the product or service. The three major types of requirements are must-be, one-dimensional, and attractive.

Must Be (Expected Quality) is Requirement that can dissatisfy (expected, but cannot increase satisfaction). One-Dimensional (Desired Quality) are those types where more of these requirements are met, the more a client is satisfied. Attractive (Excited Quality) is the type of requirement that if absent does not cause any dissatisfaction, but it will delight clients if present. Indifferent Client is indifferent to whether the feature is present or not. Reverse Feature actually causes dissatisfaction
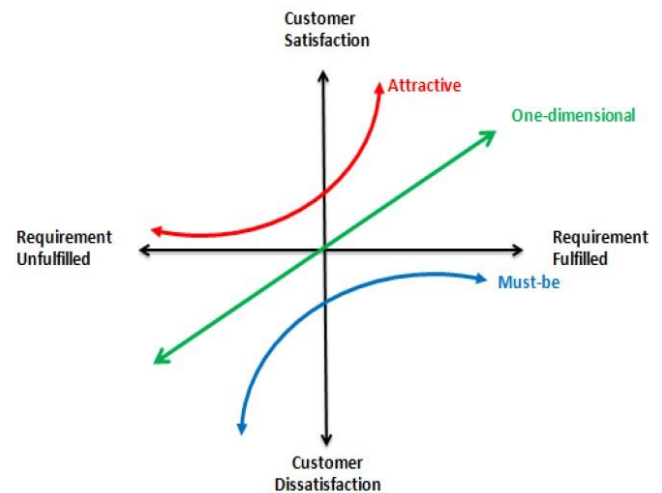
2. OBJECTIVE

The aim of this study is to provide a systematic approach for determining and prioritizing healthcare quality attributes that affect patient's satisfaction using the Kano Model tool. This study helps in identifying which all factors are to be looked upon immediately and which all are to be given least priorities. These also help in guiding important design decisions .This helps in efficient utilization of the resources present and also helps in utilization of funds available effectively in the most useful areas. This can bring about a total improvement in the administration and working of the hospital.

3. METHODOLOGY

3.1 STEP 1

Ask customers two simple questions for each attribute (functional and dysfunctional). Functional questions are asked in a positive way and dysfunctional questions are asked in a negative way. Customers should be asked to answer with one of the following responses: I like it / it must be that way / I'm neutral / I can live with it / I dislike it. So every attribute will have 2 answers. One for the functional part and other for the dysfunctional part.

Table -1: Sample Questionnaire format

	How do you feel if TOKEN Display queue system is present?	How do you feel if TOKEN Display queue system is not present?
1.TOKEN DISPLAY QUEUE SYSTEM	□ I like it that way □ It must be that way □ I am neutral □ I can live with it that way □ I dislike it that way	□ I like it that way □ It must be that way □ I am neutral □ I can live with it that way □ I dislike it that way

3.2 STEP 2

Step 2 is to use the evaluation table to count and summarize the results. The abbreviations used in the evaluation table represent one-dimensional requirements (O), attractive requirements (A), must-be requirements (M), indifferent requirements (I), questionable requirements (Q) and reverse requirements (R). For instance, if one respondent chose "I like it"1 for a functional question and answered "I can live with it" for a dysfunctional question, the tested product or service feature would be classified as an attractive requirement (A). For indifferent requirements (I), the customer is neither satisfied nor dissatisfied if the product, service or process is dysfunctional or fully functional with regard to that particular aspect. Questionable requirements (Q) represent results that exhibit contradictory answers. Reverse requirements (R) signify that the product or service feature is not wanted by customers and that they strongly expect the reverse. One-dimensional, must-be and attractive requirements, together with indifferent requirements, are primarily what we are investigating in the Kano model analysis. The Kano Evaluation table is listed below.

Customer Requirements ⇒		Dysfunctional				
		1. like	2. must-be	3. neutral	4. live with	5. Dislike
Functional	1. like	Q	A	A	A	O
	2. must-be	R	I	I	I	M
	3. neutral	R	I	I	I	M
	4. live with	R	I	I	I	M
	5. dislike	R	R	R	R	Q

Customer Requirements:

A: attractive, O: one-dimensional, M: must-be, Q: questionable result, R: reverse, and I: indifferent.

Fig -2 Kano Evaluation Table

3.3 STEP 3

Step 3 involves determining the category of the evaluated product or service feature according to the answer frequency. Generally, the results are evaluated and interpreted according to the answer frequency. However, if the questions are in-depth or detailed, the results may be distributed. Hence, it is suggested that if (O+A+M)> (I+R+Q), the maximum value of (O, A, M) should be adopted. Otherwise, the maximum value of (I, R, Q) should be used. In addition, when the results have the same two frequency requirements, the classification that would have the greatest impact on the product or service should be chosen. The priority order should follow M > O > A > I.

4. CUSTOMER SATISFACTION COEFFICIENT

The customer satisfaction coefficient indicates the extent to which satisfaction increases if a product requirement is met or the extent to which satisfaction decreases if a product requirement is not met. It is useful to know the average impact of a product or service requirement on the satisfaction of all customers. The calculation of this coefficient is as follows.

$$\text{Enhanced Satisfaction Coefficients} = \frac{A+O}{A+O+M+I}$$

$$\text{Reduced Dissatisfaction Coefficients} = \frac{O+M}{A+O+M+I}$$

4. ATTRIBUTES CHOSEN

A visit was made to the Government Medical College and about 30 attributes were chosen for study.

- Token display queue system (A1)
- Perfect medical equipment (A2)
- Hospital parking (A3)
- Clear directions for each department (A4)
- Computerized service (A5)
- Obstacle free facilities (A6)
- Properly cleaned washroom (A7)
- Condition of air conditioning systems (A8)
- Empathetic attitude of doctors (A9)
- Empathetic service attitude of nursing staff (A10)
- Skilful techniques of nursing staff (A11)
- Ability of nursing staff to handle emergencies (A12)
- Hospital sanitation (A13)
- Doctors can explain disease and treatment in detail (A14)

- Prompt reply to patients complaints (A15)
- Confidentiality of patients personal information (A16)
- Side effects do not occur when patients takes medicines (A17)
- Patients recover after treatment (A18)
- Special employee to guide and direct patients (A19)
- Quality food and refreshment in canteen (A20)
- Rest, feeding and prayer room availability(A21)
- Employee uniform (A22)
- Employee appearance (A23)
- Employee friendliness and respectfulness (A24)
- Employee attention and care (A25)
- Minimal transaction time (A26)
- Hot and fresh water availability (A27)
- list of willing blood donors group and contact number (A28)
- Laundry facility (A29)
- Lifts and Escalators (A30)

5. RESULTS AND DISCUSSIONS

Table -2: Results

ATTRIBUTE	FREQUENCY				ESC	RDC
	M	A	O	I		
A1	32	**48**	13	7	0.61	0.45
A2	**65**	31	4	0	0.35	0.69
A3	20	**60**	5	15	0.65	0.25
A4	12	**69**	4	15	0.73	0.16
A5	3	32	5	**60**	0.37	0.08
A6	**54**	31	6	9	0.37	0.6
A7	**61**	10	27	2	0.37	0.88
A8	14	20	16	**50**	0.36	0.3
A9	25	**43**	21	11	0.64	0.46
A10	25	**43**	21	11	0.64	0.46
A11	10	22	8	**60**	0.3	0.18
A12	**61**	31	9	0	0.4	0.7
A13	**54**	33	8	5	0.41	0.62
A14	38	**41**	13	6	0.54	0.51
A15	31	16	**53**	0	0.69	0.84

A16	11	30	8	**51**	0.38	0.19
A17	**71**	23	6	0	0.29	0.77
A18	**58**	25	17	0	0.42	0.75
A19	12	40	6	**42**	0.46	0.18
A20	34	15	**47**	4	0.62	0.81
A21	20	**51**	12	17	0.63	0.32
A22	4	28	8	**60**	0.36	0.12
A23	9	34	0	**57**	0.34	0.09
A24	18	32	**48**	2	0.8	0.66
A25	10	**51**	29	10	0.8	0.39
A26	6	37	2	**55**	0.39	0.08
A27	**54**	34	12	0	0.46	0.66
A28	9	**57**	14	20	0.71	0.23
A29	8	35	10	**47**	0.45	0.18
A30	34	17	**49**	0	0.66	0.83

Among the 30 attributes chosen for our study, 8 attributes comes under Must be type, 9 attributes comes under Attractive type, 4 attributes comes under One Dimensional type and 9 attributes falls under indifferent types.

Must be Attributes: A2, A6, A7, A12, A13, A17, A18, A27

Attractive Attributes: A1, A3, A4, A9, A10, A14, A21, A25, A28

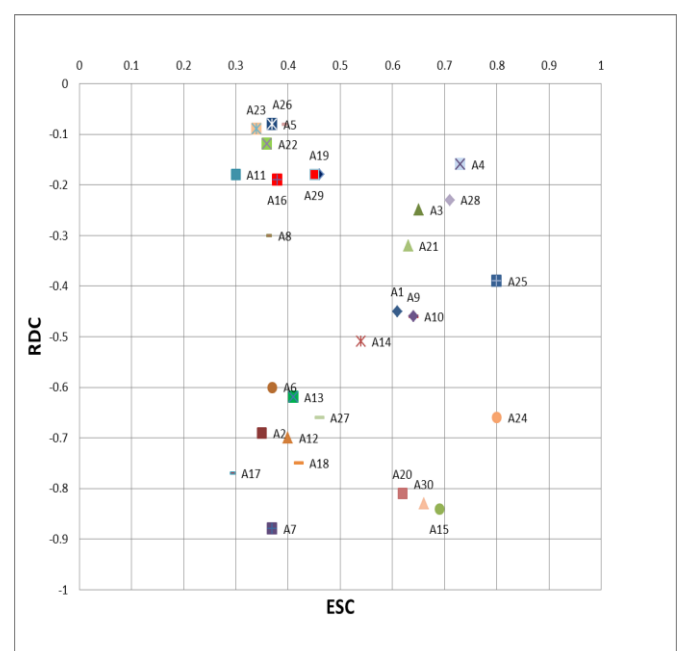One Dimensional Attributes: A15, A20, A24, A30

Indifferent Attributes: A5, A8, A11, A16, A19, A22, A23, A26, A29

Figure -3: Customer Satisfaction Coefficient Diagram

A plot of the Enhanced Satisfaction Coefficient (ESC) versus the Reduced Dissatisfaction Coefficient (RDC) gives the Customer Satisfaction Coefficient Diagram. A positive customer satisfaction coefficient ranges in value from zero to one; the closer to one the value is, the higher the influence on customer satisfaction. The negative customer satisfaction operates in the same way. A value of zero signifies that this feature does not cause dissatisfaction if it is not met. In this way, all the evaluated characteristics can be represented visually in a diagram. It is helpful to know their influence on customer satisfaction and set priorities when designing products or services. It is clear from the graph that priorities should be given to attributes which have their ESC coordinate value above 0.5. Also it can be seen that the Attractive and One Dimensional attributes falls in these area. If we are to divide this graphical plot into 4 quadrants we can say that 1st quadrant will show all the indifferent attributes, 2nd quadrant will show the attractive attributes, 3rd quadrant the must be attributes and the 4th showing the one dimensional attributes.

5.1 RECOMMENDATIONS SUGGESTED

The Priorities for the attributes chosen should be given in the order Must be > One Dimensional > Attractive > Indifferent. So according to this the attributes that should be given prime importance are Perfect medical equipment, Obstacle free facilities, Properly cleaned washrooms, Ability of Nursing staff to handle emergencies, Hospital Sanitation, No Side effects when patients takes medicines, Recovery after treatment, Hot and Fresh water availability. These all can be achieved by frequent examination and surveillance. Special training programs can be conducted for the nursing staff to make them able to handle emergencies. For all medical equipment to be in perfect condition, periodic repair and service should be scheduled. Sanitation and cleanliness of washrooms all can be ensured using proper workforce management. Proper directions can be given to the cleaning staff for these. Side effects could be avoided by keeping proper track of patient's medical history and which all medicines cause side effects to them. These all fall under the must be attributes which if not properly satisfied cause huge dissatisfaction. After these next priorities should be given to the One dimensional attributes which are Prompt reply for patients' complaints, Quality food and refreshment in canteen, Employee friendliness & Respectfulness and Availability of lifts and escalators. These if satisfied improves customer satisfaction unlike the must be attributes where satisfaction levels won't increase. Prompt reply for complaints can be ensured by proper follow up and communication with the person who made the complaint. For employee friendliness & respectfulness they could be given counseling sessions on how to behave with patients. For ensuring the quality of food in canteen, there should be regular inspections from hospital management in the canteen premises and about their functioning. After considering all these only the attractive attributes should be

looked upon as it doesn't cause any dissatisfaction even if it's not present. The Indifferent attributes found out could be completely neglected and no further action is to be taken on it.

6. CONCLUSIONS

The Kano model is a theoretical model that connects the requirements fulfilled by products or services with customer satisfaction and identifies three types of requirements that might influence ultimate customer satisfaction: must-be, one-dimensional and attractive. The application of the Kano model to customer service is expected to provide useful information on the types of requirements that must be fulfilled to enhance customer satisfaction. It acts as a tool to analyze and rank the voice of the customer data and also to Identify and implement strategy

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